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These illustrations are doubtless sufficient to indicate the extensive field that is open for the development of technological chemistry; and, with all deference to the aid that should be expected from the study of chemistry in the various systems of liberal education, they seem to afford convincing evidence that, in its highest efficiency, the chemical laboratory of the future should include the promotion of industries that depend upon the application of chemical principles.

#### NOTES AND NEWS.

THE railway which is at some time or other to traverse the African continent has been opened as far as a point near Cazengo, 140 miles from the starting-point, St. Paul de Loanda.

— A South African and International Exhibition will be opened at Kimberley in September. The processes of winning diamonds and gold will be shown; the machinery department will contain a large variety of machinery employed for mining and agricultural purposes; and the agricultural interests of the colonies and neighboring states will receive special attention.

— The British Medical Association, says *Nature*, will hold its sixtieth annual meeting at Nottingham on July 26, and the three following days. Mr. Joseph White, consulting surgeon of the Nottingham General Hospital, will preside. Addresses will be given in medicine by Professor James Cumming of Queen's College, Belfast; in surgery by Professor W. H. Hingston of Montreal; and in bacteriology by Dr. G. Sims Woodhead of the Research Laboratory of the Colleges of Physicians and Surgeons, England. The scientific work of the meeting will be done in ten sections.

— Through the courtesy of his friends, the editors of *The Scottish Geographical Magazine* have had an opportunity of perusing a diary by Mr. F. J. Matthew of a ride of 1,000 miles through a little-known part of the territory of the Argentine Republic. On Oct. 5 he started from Buenos Ayres by train, and reached Mendoza on the 7th. Thence he travelled, partly by coach, partly on horseback, to San Rafael, a distance of 210 miles. Having collected a store of provisions, the traveller set out on Nov. 16, with six mules and a man, and, crossing the river Diamante, took a westerly direction towards the Cordilleras, the route being through very beautiful scenery, for the Andes were not far distant, and the second night was passed at an elevation of 4,450 feet above sea-level. On the third day the river Atuel was reached, and two or three days later Mr. Matthew rested at the *estancia* of an English doctor living in Mendoza, where 15,000 sheep and 6,000 or 7,000 head of cattle are fed. Thirty miles from this *estancia* lies the lake Llanquanelo, a narrow sheet of water several leagues in length. Two years ago part of it dried up, leaving a flat expanse of smooth sand nine miles across. Seen from the middle, this sandy plain has a bright-blue, glassy appearance, and counterfeits water wonderfully. The lake is fed by two streams, but has no visible outlet. It is said to be drained by a subterranean stream. At any rate, in the dried bed are to be seen several of those funnel-shaped depressions common in the Karst formation; their sides are encrusted with salt. The country around is wild, and the climate cool, the altitudes at which the camp was pitched being 5,600 to 5,800 feet. Game is plentiful. Herds of guanacos were often met with, and pumas are so numerous that horse-breeding is impossible, as they kill all the foals. Near Chacaico, where Mr. Matthew stayed a month, he observed eagles, condors — which are very destructive among the calves and sheep — rattlesnakes, otters, and a variety of chinchilla (probably the Alpine viscacha, *Lagidium Peruanum*). At Agua Nueva, twenty-one miles east of Chacaico, a large quantity of stock — horses, cattle, sheep, and goats — is fed by squatters, who pay a small rent for the use of the *camp* or run (*campo*). The pasture is excellent, but last year locusts played great havoc among the more tender grasses. The return journey was made across the Atuel and Salado rivers, and over the Central Pampa to Trenque Lauquen. The country, at first rocky, changed to level pampa of poor soil covered with prickly shrubs. Rain came down in torrents and swelled the

rivers, so that they were difficult to cross. Water, which is scarce even among the mountains, is often not to be procured during a ride of fifty miles. Mosquitoes were troublesome, and at one camp a swarm of locusts obliged the traveller to pack up and move on. In the province of San Luis woods began to appear, and improved the landscape. Near Cochico is a series of shallow lakes of brackish water, studded all over with dry, barkless trees. For two or three days Mr. Matthew rode through dense woods, and then entered the grassy pampa, where *estancias* were more numerous, and the track well worn. Nothing but grass, reaching up to the knee of a man on horseback, can be seen the whole day long. Most of it is *pasto amargo* (bitter grass), and the sheep do not seem to thrive on it. The sheep are of different breeds — Lincoln, Merino, Rambouillet — and the cattle mostly crossed shorthorns. Trenque Lauquen is on a railway, by which Buenos Ayres can be reached in twelve hours.

— A new application of the stems of the larger-growing species of bamboo has recently been adopted in China for the manufacture of small trays and ornamental articles for export to Europe. It is known in China as bamboo sheeting, and it is said to be carried on at present only to a limited extent at Wenchow, where, notwithstanding that it is quite a new trade, about ten firms are now engaged in it. The process adopted is as follows: A length of bamboo is cut off, and then pared with an axe till it is of the thickness required. It is next planed with a spokeshave, and the thin cylinder so obtained is slit up, so that, on being opened out, it forms a sheet. A number of these cylinders, placed one inside the other, are immersed in boiling water for a few minutes, to render them flexible, and they are then unrolled and flattened out, by being subjected to pressure under heavy stones. These sheets are sometimes used for making fretwork and carved screens, fans, etc.; and the small, pale straw-colored pin-trays, for toilet tables, which appeared in the London shops last season, are apparently made from this specially prepared bamboo. It seems to adapt itself extremely well for moulding into many forms, and might be made available in this country for various kinds of veneering. The bamboo now appears to be the *Dendrocalamus latiflorus*, and specimens of the sheeting, and articles made from it, may be seen in Museum No. 2 of the Royal Gardens, Kew, says *The Journal of the Society of Arts*.

— The first sunshine recorder was the invention of Mr. John C. Campbell of Islay, and consisted of a hemispherical bowl, in which a spherical glass ball stood on a low pedestal. As the sun passed across the sky, its rays, concentrated by the ball, burned a groove in the side of the bowl. With this instrument the amount of sunshine during six months was roughly recorded, and the character of individual months was fairly shown, but the grooves of two successive days could not be distinguished from each other, the change in the sun's declination being very slight. Slips of cardboard were afterwards substituted for the wooden bowl; and in the present form of apparatus, devised by Sir G. G. Stokes, according to *The Scottish Geographical Magazine*, three brass grooves, concentric with the spherical lens and adjusted for the latitude, hold the cards for summer, winter, and the equinoxes, respectively. The cards are changed daily at sunset. This instrument is not without defects. When the sun is low it ceases to act, and at all times the slightest film of cloud, hardly visible to the eye, is sufficient to check the burning power of the sun's rays. Photographic processes have been devised by Mr. Jordan, Professor M'Leod, and others, but they are less easily managed. The Stokes-Campbell instruments have been in use since 1880, and the Meteorological Office has issued a report on the sunshine recorded during the years 1881–90. The sunniest spots in the Kingdom are the Channel Islands, which enjoy sunshine during 39.9 per cent of the time the sun is above the horizon in the course of the year. Falmouth shows the next highest record, 35.7 per cent, and along the whole coast of England from Milford Haven to Yarmouth there is no great variation. The coast naturally receives more sun than inland districts, where clouds are formed by the hills, and in towns the percentage is low owing to the smoke. As regards the monthly means, it is found that in Jersey alone does the sunshine ever attain to half the amount

possible; 52 per cent is the value for May and 55 for August. Geldeston, in Norfolk, follows with 48 per cent, and the eastern coast as far north as Aberdeen is decidedly sunny. Ireland and the west of Scotland have persistently cloudy skies in summer and early autumn but in late autumn Ireland is particularly favored by the sun. On the other hand, from some unexplained cause, there is a deficiency of sunshine in Jersey during November. The sunniest month in the ten years was May, 1882, when thirty-three stations registered at least 50 per cent. June, July, and August, 1887, were also very bright. The highest monthly amount entered, 68 per cent, was recorded at Falmouth in June, and in Jersey in August of that year.

— Bulletin No. 30 of the Kansas Experiment Station reports a well-planned experiment, designed to show whether the old practice of shelling off the butts and tips of ears of seed-corn was a rational one. In this experiment five duplicate plants were planted with seed from different parts of the ear. This question has also been under investigation for several years at the Ohio Experiment Station. There is a remarkably close agreement between the average yields from butts and middles in Kansas and Ohio, but this agreement does not hold out when it comes to the tips. The experiment is being continued at the Ohio station, as they are still in doubt whether the irregularities in yield observed are due to the seed or to the inevitable variations in the soil of different plots, a factor of error which can only be overcome by many repetitions of the test. In view of the results thus far indicated it may be well to call attention to the possibility of the middle of the ear failing to dry out in some seasons as well as the ends, in which case it would be less valuable instead of more valuable for seed.

— The next meeting of the International Congress of Orientalists will be held at Lisbon, from Sept. 23 to Oct. 1 of the present year, under the patronage and chairmanship of the King of Portugal. All societies and individuals will be considered members of the congress upon the payment of 25 francs. All applications should be sent to the Secretary of the Geographical Society, Hotel de la Société, Lisbon, Portugal. The scientific programme will embrace the following sections: Summary of Oriental Researches since 1891; Semitic Languages, except Arabic; Arabia and Islam; Assyriology; Palestinology; The Aryan Languages, including, 1, Sanscrit and Hindustanee, 2, Pahl (language of Ceylon) and Buddhist, 3, Iranian and Zoroastrian; Africa, with the exception of Egypt; Egyptology; Central Asia and Dardistan; Religions Compared (Mythology, Mythography, Philosophy, Laws, Oriental Sciences, History, etc); Languages Compared; Encouragement of Oriental Studies; Indo-Chinese Studies; Chinese Studies; Japanese Studies; Dravidian Studies; Malay Archipelago and Polynesia; Questions for Explorers; Ethnographic Philology and Migration of Races; Art, Archæology, Numismatics, and the Industrial Art of the East; The Scholars and the People of the East; Oriental Philology in Commerce, etc. (with subdivisions for the different modern Oriental languages); Anthropology, The Science and the Natural and Artificial Products of the East; The Orient and America; The Orient and Portugal; Special Section for the Philippine Islands; Exhibition of Books and Objects to Illustrate the above Sections.

— In the course of a journey through British New Guinea, in January last, says the Proceedings of the Royal Geographical Society, the indefatigable Administrator, Sir William Macgregor, examined and described several remarkable islands, which he shows to be almost certainly ancient atolls that have been elevated by steady horizontal uplift. The island generally known as Kitava (but called Nowau by the natives) has an area of about five or six square miles. It appears to be surrounded by a fringing reef. Nearly all round the island there is a low and slightly sloping margin covered with trees, and about a quarter of a mile wide. This terminates inland in a steep coral wall, which rises abruptly to the height of 300 or 400 feet, and is covered with forest. Shells in the coral point to a comparatively recent upheaval. From the crest of this wall the land dips gently to a plateau from 50 to 100 feet lower, which occupies the centre of the island. The plateau is undulating, has a rich chocolate soil, and being protected from wind by the raised rim, whilst subject to a copious rainfall, it is very fertile. All the people live in the

hollow, so that from the sea the island seems to be uninhabited. The central hollow is drained by filtration through the cracked and porous coral rock. Kwaiawata Island, which is from one and a half to two miles in diameter, showed precisely the same form and structure, and in Gawa Island there is a still more perfect instance of a raised atoll. The coral wall in the last instance rises so abruptly to the height of about 400 feet that part of it has to be climbed by ladders, and the plateau representing the old lagoon is nearly 100 feet below the level of the edge. Iwa, another adjacent island about a mile in diameter, is of the same kind, only the gently sloping border has been worn away, and the coral cliff meets the sea nearly all round. These remarkable islands merit more detailed study by a geologist on account of their obvious bearing on the theory of coral formations, and their resemblance to the upraised reefs of the Solomon Islands. It would appear that the area of post-tertiary elevation which Dr. Guppy demonstrated in the Solomon Islands must be extended to include the border islands of New Guinea as well.

— Brick tea has usually but little to commend it, as it is known to be composed of the sweepings and dust of the Chinese tea factories. Its chief market is Russia, which took from China last year 2,005,548 pounds, one-half the usual export, due, it is said, to the scarcity of tea dust. A new article in tea has, however, according to the *Journal of the Society of Arts*, recently sprung up in China, in the form of tablet tea, which appeared in the trade returns of Kiukiang for the first time last year, machinery having been erected there for its manufacture, and the quantity shipped from that port was 493,398 pounds. Tablet tea is made from the very best quality of tea dust. It is formed, by pressure alone, into small cakes, which are perfectly hard and solid, and somewhat resemble chocolate in appearance. The material is not, like brick tea, moistened with steam, before being compressed, and the flavor is not in any way impaired by the process of manufacture.

— An experimental voyage, which, though its main object is commercial, is not without interest of a more general kind, is about to be undertaken by Captain Gray of Peterhead, the well-known Arctic whaler. Captain Gray is of opinion that the value of the Antarctic Seas as a whaling-ground has never been properly tested, and he has, according to the Proceedings of the Royal Geographical Society, succeeded in raising the capital necessary for prosecuting an experimental voyage with a couple of vessels of some 400 or 500 tons register, propelled by auxiliary engines of 70 or 80 horse-power nominal. A statement issued by Captain Gray and his brother contains numerous extracts from the literature on the Antarctic regions, as evidence that there is a reasonable prospect of developing a new and important industry in the Southern Seas. "We have," say the authors of the statement, "been induced to select that region in the Antarctic area lying between the meridian of Greenwich and 90° west longitude as the locality in which, in our opinion, the fishery we have projected might be prosecuted with the greatest advantage. It was explored by Captain Ross in his last voyage, and has been reported by him to be frequented by the right whale in great numbers. It is besides accessible from Britain by a direct route lying between the continents of America and Africa, not exceeding 7,200 miles in length, or a two months' passage, at an average speed of five knots per hour. We think that the month of December, corresponding to that of June in the northern hemisphere, which has generally been chosen for the commencement of the work of exploration in the Antarctic Seas, is too late, and that it might be prosecuted with advantage at least a month earlier. We should therefore recommend that, on the event of vessels being fitted out to prosecute the fishery in the South Polar Seas, they should leave the country in August, and reach the whaling-ground by the end of October, which would give at least four months, viz., November, December, January, and February—ample time for completing their cargoes, and enable them to reach Britain again in May, thus leaving from three to four months for discharging and refitting before sailing on a new voyage in August." As Baron Nordenskjöld's son is to accompany the expedition as naturalist, it is to be hoped that some gain to geography may result.